


BMJ Open Patient perspectives on hypertension management in health system of Sri Lanka: a qualitative study

Manuja Perera,¹ Chamini Kanatiwela de Silva,² Saeideh Tavajoh,³ Anuradhani Kasturiratne,¹ Nathathasa Vihangi Luke,² Dileepa Senajith Ediriweera,⁴ Channa D Ranasinha,⁵ Helena Legido-Quigley,⁶ H Asita de Silva,^{2,7} Tazeen H Jafar ^{3,8}

To cite: Perera M, de Silva CK, Tavajoh S, *et al.* Patient perspectives on hypertension management in health system of Sri Lanka: a qualitative study. *BMJ Open* 2019;**9**:e031773. doi:10.1136/bmjopen-2019-031773

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2019-031773>).

CKdS and ST are joint first authors.

Received 20 May 2019
Revised 03 September 2019
Accepted 05 September 2019



© Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

Correspondence to

Dr Tazeen H Jafar;
tazeen.jafar@duke-nus.edu.sg

ABSTRACT

Introduction Uncontrolled hypertension is the leading risk factor for mortality globally, including low-income and middle-income countries (LMICs). However, pathways for seeking hypertension care and patients' experience with the utilisation of health services for hypertension in LMICs are not well understood.

Objectives This study aimed to explore patients' perspectives on different dimensions of accessibility and availability of healthcare for the management of uncontrolled hypertension in Sri Lanka.

Setting Primary care in rural areas in Sri Lanka.

Participants 20 patients with hypertension were purposively sampled from an ongoing study of Control of Blood Pressure and Risk Attenuation in rural Bangladesh, Pakistan, Sri Lanka.

Method We conducted in-depth interviews with patients. Interviews were audio-recorded and transcribed into local language (Sinhala) and translated to English.

Thematic analysis was used and patient pathways on their experiences accessing care from government and private clinics are mapped out.

Results Overall, most patients alluded to the fact that their hypertension was diagnosed accidentally in an unrelated visit to a healthcare provider and revealed lack of adherence and consuming alternatives as barriers to control hypertension. Referring to the theme 'Accessibility and availability of hypertension care', patients complained of distance to the hospitals, long waiting time and shortage of medicine supplies at government clinics as the main barriers to accessing health services. They often resorted to private physicians and paid out of pocket when they experienced acute symptoms attributable to hypertension. Considering the theme 'Approachability and ability to perceive', the majority of patients mentioned increasing public awareness, training healthcare professionals for effective communication as areas of improvement. Under the theme 'Appropriateness and ability to engage', few patients were aware of the names or purpose of their medications and reportedly missed doses frequently. Reminders from family members were considered a major facilitator to adherence to antihypertensive medications. Patients welcomed the idea of outreach services for hypertension and health education closer to home in the theme 'Things the patients reported to improve the system'.

Strengths and limitations of this study

- A strength of this paper is that in-depth interviews allowed us to explore patient pathways through the healthcare system and their various experiences in seeking care for hypertension.
- The strength of the conceptual framework is enabling the identification of facilitators and barriers to the health system accessibility and availability for the people.
- A key limitation is that despite our attempt to include participants from various groups, it is likely that we have underselected those who are least connected to the health system. However, the Control of Blood Pressure and Risk Attenuation in rural Bangladesh, Pakistan, Sri Lanka study sampling strategy was random selection of clusters stratified by distance from the government health facility.

Conclusion Patients identified several barriers to accessing hypertension care in Sri Lanka. Measures recommended improving hypertension management in Sri Lanka including public education on hypertension, better communication between healthcare professionals and patients, and efforts to improve access and understanding of antihypertensive medications.

Trial registration number NCT02657746.

INTRODUCTION

Hypertension is a major contributor to cardiovascular disease and premature death globally and regionally, specifically in South Asia.^{1 2} Over 1.1 billion adults suffer from hypertension globally, and the vast majority of these people live in low-income and middle-income countries (LMICs).^{3 4} Despite demonstrable benefits of blood pressure (BP) lowering in hypertension, BP control rates remain grossly suboptimal in LMICs and especially in rural compared with urban areas (>80% uncontrolled).^{5 6}

There are several patient-related, provider-related and health system-related factors

contributing to poor BP control. Our previous Control of Blood Pressure and Risk Attenuation trial in Pakistan suggested that patient education on hypertension and risk factors act synergistically with the training of providers to improve BP control.⁷

Our ongoing Control of Blood Pressure and Risk Attenuation in rural Bangladesh, Pakistan, Sri Lanka (COBRA-BPS) study highlighted the magnitude of uncontrolled hypertension in rural Sri Lanka, with >50% having poorly controlled BP.⁶ Unhealthy lifestyles and obesity rates were high, and adherence to antihypertensive medications was poor despite universal access to healthcare in Sri Lanka.

We identified several barriers and facilitators to patient-centred access to hypertension management in a qualitative study in rural Bangladesh, Pakistan and Sri Lanka.^{8,9} Despite a quite well-functioning health system with universal coverage, we noticed many challenges to the effective management of uncontrolled hypertension, these persuaded us to implement a qualitative study specifically in Sri Lanka.

In this paper, we sought an in-depth evaluation of the data on patients' perspectives on different dimensions of accessibility and availability of healthcare for the management of uncontrolled hypertension in Sri Lanka, with a focus on suggestions for improvement.

MATERIALS AND METHODS

The case study setting: Sri Lanka

Sri Lanka is a lower middle-income country with a population of 21.2 million, of which 81.5% is rural.¹⁰ In 2014, a study estimated that the prevalence of hypertension in all adults in Sri Lanka is 23.7%.¹¹ Another study of 2986 adults between 35 and 64 years of age reported that of the known persons with hypertension, 19.5% were not on antihypertensive medication and only 32.1% were controlled.¹² Recently, the findings from the baseline data of COBRA-BPS study showed that among those with treated hypertension, 56.5% (52.7, 60.1) has uncontrolled BP in rural areas in Sri Lanka.⁶

Both public and private sector provide preventive and curative healthcare in Sri Lanka covering western and traditional medicine. The government is mandated to provide health services at primary, secondary and tertiary levels of care funded by its tax revenue. Public sector facilities include a comprehensive network of government hospitals which provide services, free at the point of delivery for all citizens.¹³ Primary level institutions offer only general care, while secondary and tertiary levels offer both general and specialist services.

In 2012, Sri Lanka's expenditure on health was around 3.2% of gross domestic product.¹⁰ However, the public sector faces challenges such as inadequate human resources and substantial differences in facilities between rural and urban areas. Public health midwives as the same community health workers in other countries play a vital role in delivering services at community and primary

healthcare level in Sri Lanka. These health workers have mainly focused on maternal and child health, although recently their role has been expanded to include other public health issues.

Conceptual framework

We aimed to conceptualise accessibility and availability of care services to control hypertension from the patient's perspective using a mixed inductive and deductive approach and thematic analysis based on the principles of grounded theory. Our approach used elements from Levesque *et al's*¹³ framework in this paper which positions access at the interface of health systems and populations. Access encompasses both accessing services and the pathways that the patient goes through from identifying health requirements to fulfilling their needs for accessing services. Along these pathways, it is critical to recognise how patients seek services, how they reach them and how these services are available for use. This conceptual framework identifies factors that may impact access and focuses on either the health system-related institutions, organisations and providers or those present at the national level (eg, individual, household, community).

Study design and sampling

This qualitative study commenced within COBRA-BPS study that is conducted in the Puttalam district (population 0.7 million) in Sri Lanka. This study enrolled patients with uncontrolled hypertension who usually visit the same district clinic. The criteria for uncontrolled hypertension are either persistently elevated BP (systolic BP ≥ 140 mm Hg or diastolic BP ≥ 90 mm Hg) from each set of last two of three readings taken on two separate days; and/or currently maintained on antihypertensive medications. Based on similar studies in other countries, we expected to reach thematic saturation with 20 participants in Sri Lanka.⁹ Once we reached 20, we discussed among team members and concluded that we had rich data for the themes that had emerged from the analysis.⁹ More details regarding the COBRA-BPS trial design have been published previously.¹⁴

Patient and public involvement

The rationale for the study was to seek patients' views that would facilitate the design of a community intervention study.¹⁴ However, patients were not involved in the design of the qualitative study reported in this paper.

This qualitative study was undertaken in five clusters in the Anamaduwa, Chilaw, Mahawewa, Mundel and Pallama administrative divisions in Puttalam District.

In-depth interviews, chosen for their comprehensiveness and ability to provide common material for analysis, involved 20 patients with hypertension. The sampling strategy was purposive from the same trial participants who made written consent to participate in a face-to-face interview. Interviewees were categorised based on their ethnic group, age, gender, hypertension status (well

Table 1 Selected characteristics of study participants

Characteristic	Frequency (n=20)
Sex	
Female	13
Male	7
Age (years)	
45–54	4
55–64	8
65–74	6
75–84	2
Monthly income	
Prefer not to disclose	5
LKR 10 000 or less	1
LKR 10 001–LKR 20 000	1
LKR 20 001–LKR 30 000	8
More than LKR 30 000	5
Civil status	
Married	11
Widowed	9
Number of children	
0	1
1 or 2	8
3 or 4	7
5 or more	4
Years since diagnosis of hypertension	
5 years or less	5
6–10 years	7
11–15 years	2
More than 15 years	6
Control status of hypertension	
Well controlled (SBP/DBP <140/90 mm Hg)	8
Marginally high (BP ≥140/90 and <160/90 mm Hg SBP/DBP)	3
Poorly controlled (SBP/DBP ≥160/90 mm Hg)	9

BP, blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure.

controlled, marginally controlled and uncontrolled) and socioeconomic factors (table 1).

Written informed consent was obtained for audio-recording of interviews, conducted in participant's home when the trained COBRA-BPS data collector visited them for interview. Efforts were made to conduct the interviews in a private space that was deemed suitable for the respondent. All interview materials were stored securely to assure confidentiality, and we removed all the identifying

information from the transcripts (eg, organisation name, title, age, location).

DATA COLLECTION

Three investigators (HAdS, AK, MNP) and project coordinator (CKDeS) with experience in qualitative research were trained on the study protocol and the interview guide by a qualitative expert (HLQ). The bilingual data collectors did the interviews, each of which took around 1 hour. Interviewers were trained in conducting in-depth interviews using probes developed by THJ and HLQ (box 1).

The guideline was piloted with 10 individuals with hypertension in the same rural setting, and then some edits were done to adapt it for the full-scale study objectives. The guide covered topic areas such as hypertension knowledge and symptom awareness, prevention, and management, access to services, healthcare experiences and recommendations. Audio-recordings and notes were taken during each interview and reviewed by the investigators and study coordinator. Finally, the transcripts were translated into English. All translations were reviewed line by line by the study coordinator (CKDeS) and double-checked by an independent investigator (AK).

Data analysis

Transcript coding was done separately by three research team members (MP, HLQ, ST) through a mixed inductive and deductive approach and thematic analysis using QSR NVivo V.11 software, and techniques from grounded theory, including line-by-line analysis and constant comparative method.^{15 16} We used Levesque's patient-centred access-to-care framework as an underpinning theory to understand how patients seek and access care.¹³ Each quote contains the interview number and code letter for gender (F for female, M for male). All reviewers asked the questions included in the probes in local language and then checked English-translated transcripts precisely for quality and finally agreed on identified codes. All the identified codes were validated by separate reviewers and THJ performed a random check of 20% transcripts and frequently discussed with local reviewers to agree on the final themes and subthemes.

RESULTS

The study identified several findings classified into main themes through an analysis of patient responses that should be addressed in future policies and interventions to improve hypertension management in Sri Lanka. The first look into patients' awareness as a subtheme 'Approachability and ability to perceive' from Levesque's framework elements describes their condition and symptoms, and how high BP can be prevented and controlled. The second theme 'Accessibility and availability of hypertension care' examines health system responses to patients' needs, focusing on access to treatment, availability of

Box 1 Summary interview guide

Knowledge and diagnosis

- ▶ Did you experience any symptoms before you were diagnosed with hypertension?
- ▶ If yes, can you describe those symptoms of hypertension?
- ▶ Do you have other health problems?
- ▶ Can you tell me about your health problems? (prompt: the one that worries the patient most, then follow-up with other, and then ask about hypertension (HT) or diabetes)
- ▶ How did you decide to seek care? Did the family help in this process? Or any organisation?
- ▶ Can we talk about your experience of this process of seeking care?
- ▶ To what extent do you think HT is an important disease?
- ▶ How much did you know about HT before your diagnosis? What were your information sources, at the time and now?

Prevention and treatment

- ▶ Have you received any advice on preventive and control measures on HT from community health workers (CHWs)?
- ▶ Was the information received appropriate to your needs?
- ▶ Have you changed your behaviour (diet, exercise) since knowing about the condition?
- ▶ How frequently do you have your BP checked? By whom?
- ▶ What was the treatment that was first prescribed? Was it subsequently changed?
- ▶ Does a family member or organisation help you with taking the treatment?
- ▶ Did you have to pay anything out-of-pocket for the treatment or for travelling?
- ▶ Do you take other alternative medication?
- ▶ How were the healthcare facilities your visited?
- ▶ What difficulties did you face during this process while seeking treatment?
- ▶ What in the process of treatment could have been handled better?

Access of services and receiving care

- ▶ Are there shortages of drugs and consumables? Or access problems to facilities? Discuss the problems.
- ▶ Are there problems accessing Home Health Education (HHE) and other services from CHWs?
- ▶ Are there problems accessing subsidies or financial support for additional health services?

Healthcare experience and recommendations

- ▶ How would you assess your communication with health providers you have encountered?
- ▶ Do you have a trusting relationship with your general practitioner?
- ▶ To what extent have you been kept informed about your treatment?
- ▶ How can the HHE and other services provided by CHWs be improved?
- ▶ Have you heard of any initiative to improve prevention of HT?
- ▶ From your experience what could be done to make life easier for people suffering from HT?
- ▶ Are there any changes that need to be made outside the healthcare system?

medicine supplies and human resources, geographical barriers and the role of the family in helping to overcome these barriers. The third 'Appropriateness and ability to engage' reports patients' adherence to medications and taking alternative medicines and Ayurveda in their treatment. Also, this theme scrutinises the relationship

between the patient and the healthcare professional. Finally, the fourth theme discusses 'perceived usefulness of implementing the care strategy and things the patients reported to improve the system' (table 2).

'APPROACHABILITY AND ABILITY TO PERCEIVE': PATIENTS' EXPERIENCES AND AWARENESS OF SYMPTOMS, AND KNOWLEDGE OF HYPERTENSION CARE, DIAGNOSIS AND MANAGEMENT

Patients' experiences of hypertension symptoms and diagnosis

Generally, patients described that the symptoms that prompt them to seek medical advice are probably not attributable to hypertension per se. Some symptoms were acute, such as severe headaches and dizziness, nausea, feeling faint and chest pain. The following is an example of symptoms that prompted a diagnosis of hypertension. Sometimes, patients' experiences of high BP detected by midwives, hospital/clinic doctor or getting awareness from family members who experienced the same situations:

I was not feeling well. I did not recover even after taking medicines. I went to the doctor, and he talked and checked my pressure. That is how I got to know that I have high pressure. Then he gave me pressure tablets. Headache was reduced because of these pressure tablets. (I10, F)

Patients' knowledge of hypertension consequences and prevention

Among those few patients who reported worrying about hypertension and its consequences, their fear is particularly of acute events such as stroke and heart attacks. Patients reported the sources providing information on lifestyle changes, medication adherence and options for access to care:

They say that it can cause paralysis. Even our neighbours got that. Because of pressure, you can get blood clots, and you can get issues like that. When we go to clinic, and hear what other people say about their illnesses. (I04, F)

After diagnosis, several patients reflected a basic understanding of the symptoms related to consequences of hypertension. They also displayed an understanding of the need for treatment, or medications adjustment and regular monitoring as one of them explained:

Mmm... if the disease remained uncontrolled, then again we have to go there, get checked and have to take the medicine in a higher dose. (I17, F)

Perception of lifestyle modification and desire to know more

Majority of interviewees reported limited knowledge of diet for control of hypertension and prevention. However, from other participants' perspective, they were given a

Table 2 Key themes and examples of the evidence

Themes	Examples of evidence
Approachability and ability to perceive: Patients awareness and knowledge of hypertension symptoms, complications prevention and treatment	<p>"Before, we used coconut oil a lot. I was using too much salt." (I08, F)</p> <p>"I had some illnesses before. It did not recover even I took treatment. There was a doctor in Katupotha. He gave medicines and ...when I visited him he talked to me and checked my pressure. That is how I got to know that I have pressure. Then he gave me pressure tablets. Headache was reduced because of these pressure tablets." (I10, F)</p> <p>"Before this ... I have heard people saying pressure ... pressure ... But I did not know much about it." (I12, M)</p> <p>"Let me think... I was being told things like heart attacks can happen. Well, I know only that." (I15, F)</p> <p>"It is the thing that cause stroke. That was all I knew." (I02, M)</p>
Accessibility and availability of hypertension care: Access to treatment, Availability of medicine supplies, family helping	<p>"When medicines are not there, they ask us to purchase them from private pharmacies." (I03, I08, I11)</p> <p>"My family are helping me to take medicine. They remind me to take them." (I07, F)</p>
Appropriateness and ability to engage: Adherence to treatment, Alternative medications consuming Health provider relationships with patients Health systems barriers to accessing healthcare	<p>"There were some days that I forgot in the morning. Then ... I can feel the high pressure by evening." (I11, M)</p> <p>"And Ayurveda medicines. I take that also ... Doctor said it is ok to have both. After I take this ... can take that after about one hour ..." (I09, F)</p> <p>"Some of them are nice, but some of them are like the police." (I02, M)</p> <p>"She shouts with good intention not to do us bad. She shouts or scolds or throws away the book [the clinic record], she advises patients. Then in the next week, they will be better." (I11, M)</p> <p>"I Can't wait in such a long queue with this dizziness. It takes about one whole day. Very crowded. Chilaw [a District General Hospital]. Because of that, when we told the doctor, he said, he sees patients in a private clinic and asked me to come there. He is like my family doctor now." (I12, M)</p>
Perceived usefulness of implementing the care strategy and things the patients reported to improve the system: Ways forward and unmet need	<p>"If someone comes home and gives advice, it is good." (I10, F)</p> <p>"At some places, patients suffer without doctors. Some have to wait in queues for a long time. Some have to wait in queue in order to get a blood report. Even to take medicines. At that kind of situation, if there are facilities, it will be good. I do not wait in a queue because I worked there and I know people who work there. Sometimes poor people and old mothers waste their time in queues. We feel guilty that we are doing a wrong thing. But, they [staff] do not allow us to stay in the queue when we go there." (I19, M)</p>

breadth of dietary advice, and being adherent to the life-style modification advice like exemplified below:

They asked to exercise. Asked to reduce sugar... no salt. Asked to reduce oily food. Likewise asked to control diet. (I19, M)

He advises me every day.... about dietary restrictions, that I should exercise, take medications on time... likewise (I10 and I12)

Some patients reported they are using alternatives for sugar or rice. Most patients try to seek more advice on diet and exercise from doctors, and they considered them helpful.

Well, I don't eat sugar at all. I don't drink tea with sugar. I just have plain tea. I eat "Naadu" rice (a parboiled white rice variety). Very rarely I eat "Rathu Kekulu" (partially hulled red rice) (she smiles). I eat grams. I eat "Kurakkan pittu" (a traditional food made using finger millet and coconut scrapings) seldom. We don't have them to eat every day. I eat like that. I have changed like that. (I01, F)

Some patients reflected they should rest and avoid any exercise and physical activity because they are sick, and their family members also force them to stop physical activity and take rest.

These days, since I am not well, this one (the spouse) shouts at me saying 'do not exert yourself with work.'

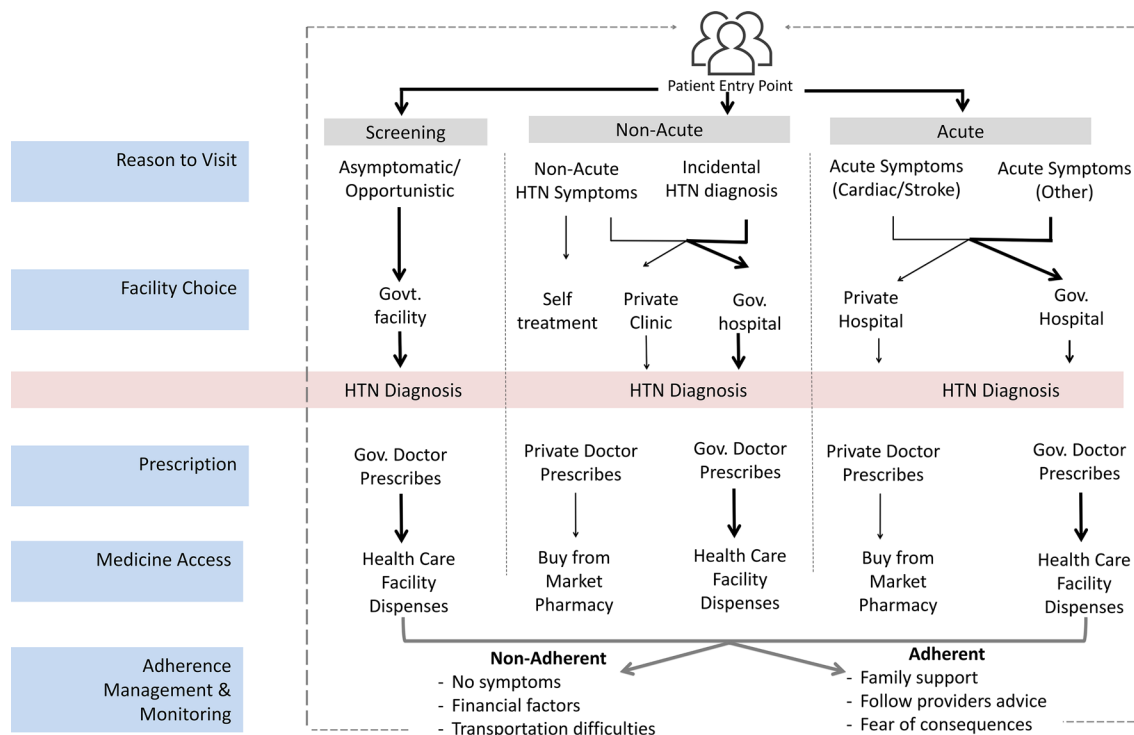


Figure 1 The different pathways of which participants obtained hypertension-related services.

Therefore, I have reduced performing chores. But I like gardening...to grow flowers. Water them and look after them. (I12, M)

'ACCEPTABILITY AND AVAILABILITY OF HYPERTENSION CARE' Service accessibility

Patients' pathways to hypertension diagnosis, treatment and management

Participants obtained services from four types of government health institutions in order of ascending hierarchy, Primary Medical Care Units, Divisional Hospitals, District General Hospitals and The National Institute of Nephrology Dialysis Transplantation (a national level specialised healthcare institution on renal care). Patients followed three common pathways: government hospitals/clinics/inward for acute care and the local pharmacy, private doctors and private/hospital/local pharmacy for non-acute symptoms, and incidental hypertension identification while seeking treatment for another condition. We mapped out the patients' journey, starting with the call to action which triggered seeking healthcare facilities, followed by their decision to access facility, diagnosis, prescription and finally where they accessed medicine and how they adhered to the treatment (figure 1). The most common patient pathway was to obtain diagnosis, treatment and follow-up services from a government health institution and do follow-up via the same government hospital (figure 2). The second common pathway was to obtain diagnosis and treatment services via a government institution but to follow-up through the private care system (figure 3). The third pathway that patients traverse

through starts with hypertension diagnosis at a government clinic/hospital and then diverts to the private clinic due to either non-adherence or challenges encountered in the government clinics (figure 4).

However, patients reported a lack of a defined pathway to follow and having a perceived opportunity to choose the healthcare institution. While accessing government health services, patients complained of a lack of available doctors, diagnostics and medicines. The general procedure in a government primary healthcare institution is time-consuming from the majority of patients' perspective as portrayed in the following quote:

I have to wait in a queue to check my blood pressure. It takes nearly an hour, sometimes one and a half hours. Then, I will be asked to wait in a queue according to the number given to see the doctor. (I01, F)

Hypertension might be diagnosed in other services (eg, family planning or dental clinic) and not specifically in the hypertension care system. Some patients declared that they had no symptoms of hypertension and their high BP was detected while they visited the dentist or doctor for a routine check-up, or any other complaint as exemplified in the quotes below (figure 2).

Family planning clinics give contraceptive injections. When I went to get one, they said they have to check my BP first. When they checked, it was found to be high. (I10, F)

I got diagnosed when I went to a private general practitioner to take treatment for gastritis. He checked my BP and then only I got to know that I

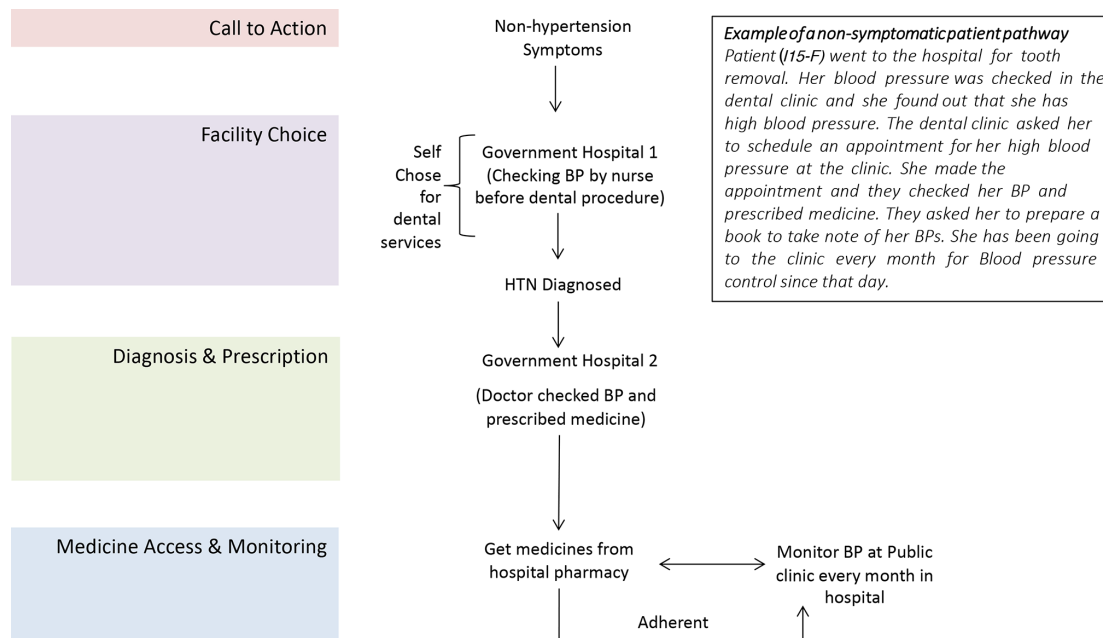


Figure 2 Patient pathway: non-hypertension symptoms. BP, blood pressure.

had hypertension. There were no other issues except for burning sensation in the stomach. (I02, M)

Participants' choice of a healthcare institution was determined by a complex web of factors such as family support, treatment cost, distance to the clinic, and transportation cost and facilities available (figure 3).

Patients sometimes chose to bypass the local primary healthcare providing institution and sought care at

secondary or tertiary level hospitals. It was reported as a major determinant for some participants to divert to private clinics for follow-up as one of the patients explained:

More facilities are available there than in other hospitals. Earlier I attended the District General Hospital near our area. As there was no special care and facilities, I got it arranged back to the national level specialized institute for renal care. (I11, M)

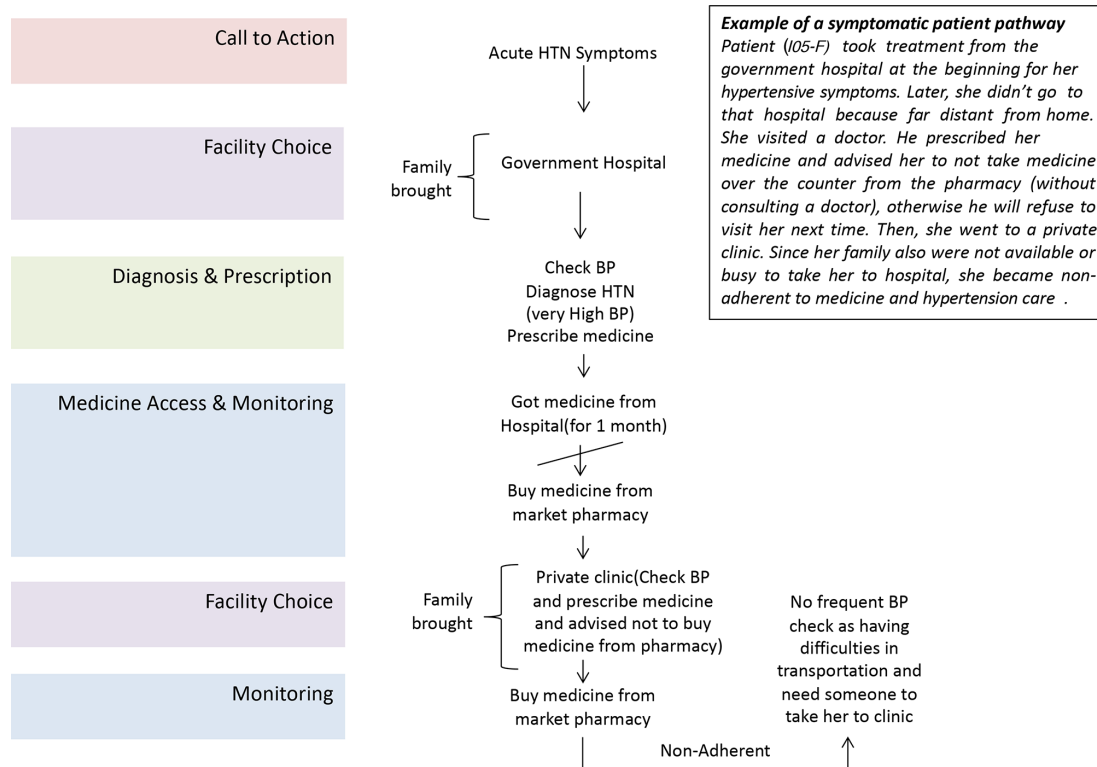


Figure 3 Patient pathway: acute hypertension symptoms. BP, blood pressure.

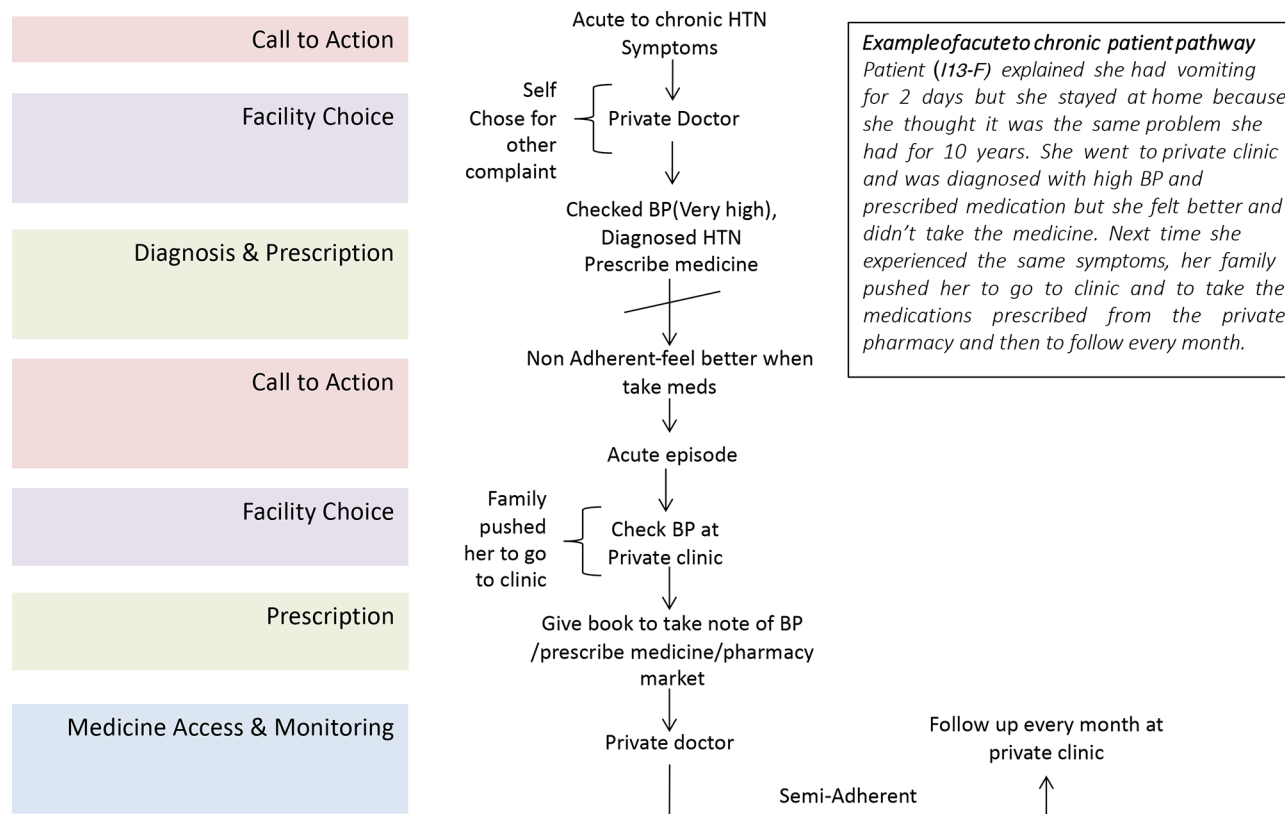


Figure 4 Patient pathway: acute to chronic symptoms. BP, blood pressure.

Medicine accessibility

Some patients mentioned medications cost as a barrier to adherence provided that bought more expensive medicines from private pharmacies and periodical shortages in government hospitals as demonstrated by the following quotes:

Generally, I have to spend around Rs. 750 to 800. Sometimes expenditure is around Rs. 1000. Sometimes two or four medicines are unavailable. (I12, M)

Sometimes Losartan and Aspirin are not there, and they advise me to buy it from a pharmacy. (I03, F)

The doctor prescribes for two months that costs around Rs 5000. We buy medicines from the pharmacies there (Colombo) because sometimes some medicines are not available in our area. (I03, F)

Quality of care and service delivery

One of the issues reported related to the quality of services was the long waiting time at the hypertension management clinics. It is also a major determinant for diverting patients to private healthcare facilities as illustrated in the following quote:

One doctor asked me to come to the government hospital clinic. Then I went for one month. I stopped going there because of the very high waiting time and having to wait in queues. I started going to the private clinic that day onwards. (I14, F)

Patients reported variably on the quality of service delivery for different levels of healthcare. They often prefer to travel such long distance to receive better quality of care from the highest level institution which is a specialised institution for renal care in Colombo as the patient described:

More facilities are available there than in other hospitals. Earlier I attended the District General Hospital near our area. As there was no special care and facilities, I got back to the specialized institute for renal care. (I11, M)

Participants framed significant impairments on quality of care such as limited space, long waiting time and inadequate human resources and hypertension care services as the following two participants reported:

Thirty chairs are there. We have to be there at seven in the morning to get our books (clinic records). Books are only given for five or ten people. Then only the other ten would receive the books. Therefore, we have to spend about two to three hours in the clinic. (I12, M)

Some days doctor is not there. There is only one doctor in that hospital. So, there is no one when he is on leave. (I06, M)

The other main issue related to the quality of care was delayed diagnosis of disease. Majority of patients were diagnosed incidentally as respondent explained:

When I woke up one morning and got out of the bed, I felt faintish. I couldn't stand up. So, I went to a doctor to get myself checked. That's when they diagnosed high BP. (I09, F)

Health system barriers to accessing health care

We identified some barriers to access healthcare services such as transport costs, unavailability of a chaperone to accompany to the healthcare institution, the inadequacy of local public transport to hospitals and lack of emergency transportation services.

Public transport neither covers the whole area nor has scheduled trips to accommodate the clinic timings. Since most of the patients are elderly, walking the average distance of 3 km is not possible. One of the interviewees described the transport issue:

We have transport issues. No buses are there. So, we have to hire a three-wheeler (Tuk Tuk). If a transport service is arranged to the hospital, it would be much better for us. We have to walk a long distance under the sun. It's the main difficulty we have. (I09, F)

Inadequate health workforce and facilities cause access issue in emergencies like the participant explained:

Earlier we had an ambulance. Now because we don't have a doctor, the ambulance was returned to the Regional Director's office. District General Hospital is around 22–23 km away from our village. (I20, M)

'APPROPRIATENESS AND ABILITY TO ENGAGE'

Adherence and knowledge of medicines

A small number of patients reported knowing their medication, its duration and cost, while a large number did not have any idea of their medicines. Few interviewees reported how their family facilitated their adherence by reminding them to take medicines per prescribed frequency. Some declared that they sometimes forget to take their medicine and subsequently their BP increases:

There were some days that I forgot in the morning. Then ... I can feel the (high) pressure by the evening." (I11, M)

Some also reported using alternative medications such as Ayurveda and herbal medicines, suggesting that it is beneficial and harmless. Those patients reported they continue to use such alternatives as their doctors did not advise to stop taking alternative treatment as exemplified below:

Other than medicines for BP, I do take Ayurveda (medicines) as well. (I19, M)

HEALTHCARE PROVIDER RELATIONSHIPS WITH PATIENTS

Health information availability

Majority of patients framed the importance of the relationship between healthcare providers and patient. They

like doctors who talk to them and transfer their information on their health situation completely. There were several negative experiences due to inadequate coverage of the health workforce as an example is shown in the narrative below:

Blood pressure is checked by attendants (a staff category that is not trained to measure blood pressure). If we ask whether the blood pressure is good, then they answer it's good. That's all. (I01, F)

Participants reported attending some health education sessions conducted by health institutions in tandem with usual education sessions in clinics for acquisition of knowledge about hypertension. One of the patients explained:

Some health education programmes were held at the (says the name of the hospital) clinic twice. They told about diet control, exercises and weight reduction, avoidance of starchy food and sweets. Those were the things they told us about. (I17, F)

Several respondents reflected the paucity of education on primary prevention. They described they would self-manage their disease if they knew how to do that. Majority of interviewees perceived that public information about the control of hypertension and management is either unavailable or inadequate like the following quote:

I have heard that there is a disease like this. Mmmm.... I didn't know any details regarding the disease though. If blood glucose is high, we die (laughs). If blood pressure is high, we die. Those things I've heard. But I didn't know any details about the disease. (I01, F)

One respondent stated that coverage of information transfer to the public had been improved because of mass media. However, another interviewee mentioned they could not watch health programme on TV because their timing is not ideal as reported:

At the clinic, there is no time to educate us on our disease. Nowadays because of media, we get to know things. (I03, F)

I was not aware of hypertension before this programme (Baseline screening for hypertension in this study). We don't watch health programmes because they are telecasted in the morning. (I05, F)

Doctor–patient relationship

The negative perceptions were mainly centred around the quality of doctor–patient communication. Participants reported that doctors were sometimes discourteous, uncaring and did not take patients' symptoms seriously as they explained:

Recently I had an episode of fainting attack at home. I told him (doctor) about it, but he didn't care. (I17, F)

It would have been better if we can talk to them. But there is no time to chat. They have lots of patients to examine. Therefore, they quickly assess them and prescribe medicines. (I01, F)

When someone has high pressure, she shouts at that person. She scolds or throws away the book (the clinic record). (I15, F)

THINGS TO IMPROVE IN THE HEALTHCARE SYSTEM

Unmet needs and recommendations for the better provision of hypertension treatment and management included the need for improved access to doctors, medicine and diagnostics, and education, especially in government healthcare settings. Patients also described welcoming healthcare outreach near their homes and the need for home health education because it would help the elderly and high-risk individuals become aware of their disease. One of the participants explained how to improve healthcare accesses:

Lack of knowledge. There are many poor people in these villages who are not educated. Old parents... they do not understand or forget. No facilities to come and go. Some do not go to the clinic for months. If a midwife or someone comes home and force them, it will be good. Some mothers live in villages having high blood pressure and do not even know. They take a tablet for severe headache, vomiting and then fainting ... (I19, M)

DISCUSSION

This qualitative study explored knowledge and experiences of patients regarding health-seeking behaviour for hypertension, and the pathways to seeking hypertension care in a health system that provides free care at the point of contact in a rural setting of the LMIC. Patients reported low level of knowledge about hypertension before they were diagnosed compared with after diagnosis. Some patients were aware of the consequences of untreated hypertension and perceived that knowledge transfer is delayed. Patients were diagnosed through a variety of pathways, mainly through opportunistic screening when visiting doctors for unrelated acute conditions including hospitalisations, or for non-acute symptoms that probably have been related to complications of hypertension. Our findings underscore that the availability of antihypertensive medications free of cost in the public sector alone is not sufficient, and several additional barriers need to be addressed to improve hypertension control and prevention.

While government sector doctors provide care to the patients in Sri Lanka for free, none of the participants were exposed to screening for hypertension until they were symptomatic or accidentally diagnosed of hypertension. None of the participants talked about or reported utilising the services of the Healthy Lifestyle Centres,

the primary care clinics for prevention and control of non-communicable diseases, which provides screening for hypertension. In our study, the long queues and waiting times at government clinics were emphasised as a major deterrent to access. Frequent shortages of medicines and low perceived quality of care compared with the private sector also emerged as significant determinants of utilising freely available government services. Physicians at private clinics in this setting have a greater role in initial diagnosis and management of hypertension, as well as control of patients with episodic BP increases compared with the doctors in the government sector. However, the out-of-pocket cost of consultation and medications was reported as challenging. Hence, these barriers can be identified as the main contributing factors for poor adherence to antihypertensive treatment and control.

Evidence from clinical trials has demonstrated the benefit of both lifestyle modification (including an increase in physical activity and a diet rich in fruit and vegetables, low in salt and low in saturated fat) and antihypertensive medication therapy in lowering BP.¹⁷ Our findings show that many patients with hypertension had insufficient knowledge and misconceptions about lifestyle modifications required to lower BP. For example, only a few patients could identify insufficient physical activity and obesity as risk factors, and few patients reported that they should rest and not engage in physical activity because they are ill, even when their BP was controlled. These results are noteworthy as our previous researches also indicate that the vast majority of persons with hypertension are overweight or obese in Sri Lanka, and very few were physically active. Our findings highlight the need for more efforts to raise public awareness and attempts to promote healthy lifestyles for prevention and management of hypertension.

Our current COBRA-BPS trial also underscores that poor communication between physician and patients contributes significantly to the lack of understanding of the importance of taking medicines and poor adherence to antihypertensive medications. Many patients complained about insufficient contact time. Moreover, the encounter with the physician was reportedly a negative experience in part due to the lack of effort on the part of the physician to explain the illness or provide information related to the prescribed medications.¹⁸ Our findings suggest that hypertension care in Sri Lanka could benefit from training healthcare providers on effective communication and shared decision-making, and team-based approaches using non-physician healthcare workers to complement education and advice delivered by the physician. Many patients in our study welcomed the idea of engaging public health midwives to lead BP screening and home-based health education as a complementary approach to physician management as previous studies concluded the same.¹⁹

In conclusion, despite an organised infrastructure in the Sri Lankan healthcare system, our study identifies several barriers related to detection, treatment and control of

hypertension. These limitations could seriously affect the adherence of the patients, resulting in adverse health outcomes including premature mortality and chronic disability. Our findings warrant the need to make a change in the mechanism of providing healthcare for the management of hypertension. Our ongoing COBRA-BPS trial aims to improve community-oriented healthcare by training providers in communication skills and team-based care principles. Further, creating accountability of the healthcare providers should be a cornerstone in the reorientation of the present healthcare system in Sri Lanka to address the existing gaps and meet challenges of uncontrolled hypertension in Sri Lanka.

Author affiliations

¹Department of Public Health, University of Kelaniya Faculty of Medicine, Ragama, Sri Lanka

²Clinical Trials Unit, Department of Pharmacology, University of Kelaniya Faculty of Medicine, Ragama, Sri Lanka

³Health Services and System Research, Duke-NUS Medical School, Singapore City, Singapore

⁴Centre for Health Informatics, Biostatistics and Epidemiology, University of Kelaniya Faculty of Medicine, Ragama, Sri Lanka

⁵Department of Pharmacology, Clinical Trials Unit, University of Kelaniya Faculty of Medicine, Ragama, Sri Lanka

⁶Saw Swee Hock School of Public Health, NUS, Singapore city, Singapore

⁷Department of pharmacology, University of Kelaniya Faculty of Medicine, Ragama, Sri Lanka

⁸Duke Global Health Institute, Durham, North Carolina, USA

Acknowledgements The authors would like to acknowledge all members of the Control of Blood Pressure and Risk Attenuation in rural Bangladesh, Pakistan, Sri Lanka (COBRA-BPS) study group and the support teams and staff at the respective institutions for their contribution to the study. They would like to thank the data collectors for the efforts, and the study participants for their cooperation.

Contributors THJ conceived the conceptual design of COBRA-BPS study. ST, MNP and HLQ performed the thematic analysis. DSE, NL and CDR performed the data validation. MNP, CKdS and ST wrote the first draft in consultation with THJ, HAdS and AK. All authors reviewed and provided comments on the paper and approved the final version. THJ is the guarantor.

Funding COBRA-BPS is funded by the UK Department for International Development, the Medical Research Council and the Wellcome Trust.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Ethical clearance for the study was obtained from the Ethics Review Committee of Faculty of Medicine, University of Kelaniya. COBRA-BPS study was registered in the Sri Lanka Clinical Trials Registry (SLCTR/2016/005) and Duke-NUS Medical School, in Singapore, and London School of Hygiene and Tropical Medicine, London, UK.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is

properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Tazeen H Jafar <http://orcid.org/0000-0001-7454-8376>

REFERENCES

- Forouzanfar MH, Liu P, Roth GA, *et al*. Global burden of hypertension and systolic blood pressure of at least 110 to 115 MM Hg, 1990–2015. *JAMA* 2017;317:165–82.
- Lim SS, Vos T, Flaxman AD, *et al*. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the global burden of disease study 2010. *The Lancet* 2012;380:2224–60.
- Misra A, Tandon N, Ebrahim S, *et al*. Diabetes, cardiovascular disease, and chronic kidney disease in South Asia: current status and future directions. *BMJ* 2017;357.
- Zhou B, Bentham J, Di Cesare M, *et al*. Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19.1 million participants. *The Lancet* 2017;389:37–55.
- Organization WH. Global status report on noncommunicable diseases 2014; 2014.
- Jafar TH, Gandhi M, Jehan I, *et al*. Determinants of uncontrolled hypertension in rural communities in South Asia—Bangladesh, Pakistan, and Sri Lanka. *Am J Hypertens* 2018;31:1205–14.
- Jafar TH, Hatcher J, Poulter N, *et al*. Community-Based interventions to promote blood pressure control in a developing country. *Ann Intern Med* 2009;151:593–601.
- Legido-Quigley H, Naheed A, de Silva HA, *et al*. Patients' experiences on accessing health care services for management of hypertension in rural Bangladesh, Pakistan and Sri Lanka: a qualitative study. *PLoS One* 2019;14:e0211100.
- Naheed A, Haldane V, Jafar TH, *et al*. Patient pathways and perceptions of hypertension treatment, management, and control in rural Bangladesh: a qualitative study. *Patient Prefer Adherence* 2018;12:1437–49.
- World Bank Group. Sri Lanka country profile, 2016. Available: <https://data.worldbank.org/country/sri-lanka?view=chart>
- Katulanda P, Ranasinghe P, Jayawardena R, *et al*. The prevalence, predictors and associations of hypertension in Sri Lanka: a cross-sectional population based national survey. *Clin Exp Hypertens* 2014;36:484–91.
- Kasturiratne A, Warnakulasuriya T, Piniyapathirage J, *et al*. P2-130 epidemiology of hypertension in an urban Sri Lankan population. *Journal of Epidemiology & Community Health* 2011;65(Suppl 1):A256–A56.
- Levesque J-F, Harris MF, Russell G. Patient-Centred access to health care: conceptualising access at the interface of health systems and populations. *Int J Equity Health* 2013;12:18.
- Jafar TH, Jehan I, de Silva HA, *et al*. Multicomponent intervention versus usual care for management of hypertension in rural Bangladesh, Pakistan and Sri Lanka: study protocol for a cluster randomized controlled trial. *Trials* 2017;18:272.
- Strauss AL. *Qualitative analysis for social scientists*. Cambridge University Press, 1987.
- Charmaz K. *Constructing grounded theory: a practical guide through qualitative analysis*. Sage, 2006.
- Sacks FM, Svetkey LP, Vollmer WM, *et al*. Effects on blood pressure of reduced dietary sodium and the dietary approaches to stop hypertension (DASH) diet. *New England Journal of Medicine* 2001;344:3–10.
- Jolles EP, Clark AM, Braam B. Getting the message across: opportunities and obstacles in effective communication in hypertension care. *J Hypertens* 2012;30:1500–10.
- Montgomery AA, Harding J, Fahey T. Shared decision making in hypertension: the impact of patient preferences on treatment choice. *Fam Pract* 2001;18:309–13.